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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,198	02/26/2002	Eyal Krupka	10559-654001/P13018	8485
20985	7590	05/18/2006	EXAMINER	
FISH & RICHARDSON, PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			AGHDAM, FRESHTEH N	
			ART UNIT	PAPER NUMBER
			2611	

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/086,198

Applicant(s)

KRUPKA, EYAL

Examiner

Freshteh N. Aghdam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-17 and 19-27 is/are rejected.
- 7) ☒ Claim(s) 9, 18 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's argument regarding independent claims 1, 10, and 19 filed 2/23/2006 has been fully considered but they are not persuasive. Applicant's argument regarding claims 4-5, 13-14, and 22-23 is found to be persuasive by the examiner.

Applicant's Argument: On pages 4-5, applicant argues that the claimed invention is not taught or suggested by Baier "fitting these discrete and adaptively updated channel tap vectors to find or update the parameters of a continuous channel tap vector model".

Examiner's Response: Regarding applicant's argument for claims 1, 10, and 19, Baier teaches this limitation (Fig. 2, means 28, 29, and 31; Col. 4, Lines 26-47; Col. 6, Lines 58-68; Col. 7, Lines 1-11) because applicant shows in figure 3 block 404 that a discrete adaptive channel tracking algorithm is used to find adaptively updated channel taps for each symbol and the equalizer uses the channel tap model parameters to continually update and program the channel taps to accurately recover data. Therefore, examiner interprets this limitation as while data is received, the channel tracker will continuously update (track) the taps and the equalizer will recover the data based on the updated channel taps. Applicant cites continual tracking of the taps in paragraphs 16, 18, and 32.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6-8, 10, 15-17, 19, and 24-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Baier (US 5,185,764).

As to claims 1, 10, and 19, Baier teaches initializing the parameters of a continuous (i.e. time dependent or time varying) channel tap model (Fig. 2, means 28; Col. 4, Lines 15-18); calculating one or more sets of channel taps from the channel tap model (Fig. 2, means 28 and 31); using the one or more sets of channel taps to estimate one or more symbols in a received data stream (Fig. 2, means 29); calculating one or more sets of adaptively updated channel taps from the one or more symbols estimated in the received data stream (Fig. 2, means 29 and 31); and fitting the one or more sets of adaptively updated channel taps to update the parameters of the continuous channel tap model (Fig. 2, means 28, 29, and 31; Col. 4, Lines 26-47; Col. 6, Lines 58-68; Col. 7, Lines 1-11).

As to claims 2, 11, and 20, Baier teaches obtaining a set of channel taps from an input data stream containing a training data stream and a locally generated copy of the training data stream; and initializing the parameters of the channel tap model with the first set of channel taps (Fig. 2; Col. 6, Lines 58-68; Col. 7, Lines 1-11).

As to claims 6, 15, and 24, Baier teaches iteratively determining the parameters of the channel tap model; and initializing the parameters determined in a previous iteration by fitting the one or more sets of adaptively updated channel taps determined in the previous iteration (Fig. 2, means 28, 29, and 31; Col. 6, Lines 58-68; Col. 7, Lines 1-11).

As to claims 7, 16, and 25, Baier teaches using the channel tap model to estimate progressively larger numbers of symbols in subsequent iterations of the method (Col. 4, Lines 23-26).

As to claims 8, 17, and 26, Baier teaches terminating the iterative method until a predetermined condition has been met (Col. 5, Lines 36-40).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 12, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baier, and further in view of Belotserkovsky et al (US 2002/0021750).

As to claims 3, 12, and 21, Baier teaches all the subject matters claimed above, except for running an LMS algorithm to calculate the one or more sets of adaptively updated channel taps from the one or more estimated symbols. Belotserkovsky teaches using an LMS algorithm for tap adaptation (Par. 28). Therefore, it would have been

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obvious to one of ordinary skill in the art to combine the teaching of Belotserkovsky with Baier in order to perform channel tap adaptation by taking into the account no probabilistic assumption (signal model).

Claims 4-5, 13-14, and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baier, and further in view of Raphaeli (US 6,937,648).

As to claims 4-5, 13-14, and 22-23, Baier teaches all the subject matter claimed above, except for fitting the one or more sets of adaptively updated channel taps to a channel tap model that is linear in time. Raphaeli teaches an adaptive equalizer in a receiver that uses a channel tap model that is linear in time (Col. 5, Lines 66-67; Col. 6, Lines 1-6). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Raphaeli with Baier in order to reduce the intersymbol interference by simplifying the computations (i.e. the computation of channel tap model is simpler when it is assumed to be linear in time).

Allowable Subject Matter

Claims 9, 18, and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claims 9, 18, and 27, the prior art of record fails to teach terminating the iterative method when the number of symbols to estimate is greater than the number of symbols in a data burst.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Stenstrom et al (US 6,888,903) see figure 3; Arslan et al (US 6,411,649) see figure 3.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Freshteh N. Aghdam whose telephone number is (571) 272-6037. The examiner can normally be reached on Monday through Friday 9:00-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Freshteh Aghdam
May 14, 2006


KEVIN BURD
PRIMARY EXAMINER